

CLAIMS

That which is claimed is:

1. A self-expanding stent device comprising:

5 a small diameter skeletal tubular member having a thin wall and having a proximal end and a distal end; said wall of said tubular member comprised of a plurality of cells which are formed by a plurality of interconnected, non-inverted horizontal and inverted horizontal S-shaped members; said interconnected S-shaped members are generally parallel with the longitudinal axis of said tubular member; each interconnected
10 S-shaped member has a proximal end, a distal end, a proximal intermediate section, and a distal intermediate section; and,

said interconnected S-shaped members having a repeating pattern comprised of a configuration in which said proximal end of each non-inverted horizontal S-shaped member is attached to said distal intermediate section of an adjacent inverted horizontal
15 S-shaped member, said distal end of each non-inverted horizontal S-shaped member is attached to said proximal intermediate section of another adjacent inverted horizontal S-shaped member, said proximal end of each inverted horizontal S-shaped member is attached to said distal intermediate section of an adjacent non-inverted horizontal S-shaped member, and said distal end of each inverted horizontal S-shaped member is
20 attached to said proximal intermediate section of another adjacent non-inverted horizontal S-shaped member.

2. A self-expanding stent device as defined in Claim 1, in which said tubular member has a small compressed diameter for delivery within a vessel and a normally

biased expanded diameter for retaining said stent device against the walls of the vessel;
upon compression of said tubular member to its small diameter said proximal
intermediate section of each non-inverted horizontal S-shape member pulls said distal
end of an adjacent inverted horizontal S-shaped member, said distal intermediate
5 section of each non-inverted horizontal S-shaped member pulls said proximal end of
another adjacent inverted horizontal S-shaped member, said proximal intermediate
section of each inverted horizontal S-shaped member pulls said distal end of an
adjacent non-inverted horizontal S-shaped member, and said distal intermediate section
of each inverted horizontal S-shaped member pulls said proximal end of another
10 adjacent non-inverted horizontal S-shaped member thereby causing said cells of said
wall to collapse and cause said tubular member to attain said small diameter.

3. A self-expanding stent device as defined in Claim 1, wherein said tubular
member includes a proximal leg; said proximal leg extends generally parallel to the
15 longitudinal axis of said tubular member and is attached to the proximal end of said
tubular member; the proximal leg includes an attachment flange.

4. A self-expanding stent device as defined in Claim 3, wherein said proximal
leg is biased outwardly from the longitudinal axis of said tubular member.

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5. A self-expanding stent device as defined in Claim 2, wherein said stent
device is constructed from a nickel-titanium alloy.

6. A self-expanding stent device as defined in Claim 3, wherein said proximal leg includes a radiopaque marker.

7. A self-expanding stent device as defined in Claim 1, wherein said tubular member includes at least one distal leg; said distal leg extends generally parallel to the longitudinal axis of said tubular member and is attached to the distal end of said tubular member.

8. A self-expanding stent device as defined in Claim 7, wherein said distal leg includes a radiopaque marker.

9. A self-expanding stent device comprising:
a small diameter, skeletal tubular member having a thin wall and having a proximal end and a distal end; said wall of said tubular member comprised of a plurality of cells which are formed by interconnected sinusoidal members; said sinusoidal members are generally parallel to the longitudinal axis of said tubular member; each sinusoidal member extends over one and a half periods of a sinusoidal curve and each has a proximal end, a distal end, a proximal peak, and a distal peak; said sinusoidal members have a repeating pattern in which said proximal end of each sinusoidal member is attached to said distal peak of an adjacent sinusoidal member and said distal end of each sinusoidal member is attached to said proximal peak of another adjacent sinusoidal member.

10. A self-expanding stent device as defined in Claim 9, in which said tubular member has a compressed diameter for delivery within a vessel; as said tubular member is compressed to its small diameter, said proximal peak of each sinusoidal member pulls said distal end of an adjacent sinusoidal member and said distal peak of each sinusoidal member pulls said proximal end of another adjacent sinusoidal member causing said cells of said wall to collapse thereby allowing said tubular member to attain said small diameter; and,

said tubular member having an expanded larger diameter which allows said tubular member to exert an outward, radial force on said vessel once said tubular member is deployed.

11. A self-expanding stent device as defined in Claim 9, wherein said tubular member includes a proximal leg; said proximal leg extends generally parallel to the longitudinal axis of said tubular member and is attached to the proximal end of said tubular member; the proximal leg includes an attachment flange.

12. A self-expanding stent device as defined in Claim 11, wherein said proximal leg is biased outwardly from the longitudinal axis of said tubular member.

13. A self-expanding stent device as defined in Claim 10, wherein said stent device is constructed from a nickel-titanium alloy.

14. A self-expanding stent device as defined in Claim 11, wherein said proximal leg includes a radiopaque marker.

15. A self-expanding stent device as defined in Claim 9, wherein said tubular member includes at least one distal leg; said distal leg extends generally parallel to the longitudinal axis of said tubular member and is attached to the distal end of said tubular member.

16. A self-expanding stent device as defined in Claim 15, wherein said distal leg includes a radiopaque marker.

17. A self-expanding aneurysm cover comprising:
a small diameter skeletal tubular member having a thin wall and having a proximal end and a distal end; said wall of said tubular member comprised of a plurality of cells which are formed by a plurality of interconnected, non-inverted horizontal and inverted horizontal S-shaped members; said interconnected S-shaped members are generally parallel with the longitudinal axis of said tubular member; each interconnected S-shaped member has a proximal end, a distal end, a proximal intermediate section, and a distal intermediate section; and,
said interconnected S-shaped members having a repeating pattern comprised of a configuration in which said proximal end of each non-inverted horizontal S-shaped member is attached to said distal intermediate section of an adjacent inverted horizontal S-shaped member, said distal end of each non-inverted horizontal S-shaped member is

attached to said proximal intermediate section of another adjacent inverted horizontal S-shaped member, said proximal end of each inverted horizontal S-shaped member is attached to said distal intermediate section of an adjacent non-inverted horizontal S-shaped member, and said distal end of each inverted horizontal S-shaped member is
5 attached to said proximal intermediate section of another adjacent non-inverted horizontal S-shaped member.

18. A self-expanding aneurysm cover as defined in Claim 17, in which said tubular member has a small compressed diameter for delivery within a vessel and a
10 normally biased expanded diameter for retaining said aneurysm cover against the walls of the vessel; upon compression of said tubular member to its small diameter said proximal intermediate section of each non-inverted horizontal S-shape member pulls said distal end of an adjacent inverted horizontal S-shaped member, said distal intermediate section of each non-inverted horizontal S-shaped member pulls said
15 proximal end of another adjacent inverted horizontal S-shaped member, said proximal intermediate section of each inverted horizontal S-shaped member pulls said distal end of an adjacent non-inverted horizontal S-shaped member, and said distal intermediate section of each inverted horizontal S-shaped member pulls said proximal end of another adjacent non-inverted horizontal S-shaped member thereby causing said cells of said
20 wall to collapse and allowing said tubular member to attain said compressed diameter.

19. A self-expanding aneurysm cover as defined in Claim 17, wherein said tubular member includes two proximal legs, said proximal legs extend generally parallel

to the longitudinal axis of said tubular member and are attached to said proximal end of said tubular member; at least one proximal leg includes a T-shaped attachment flange.

20. A self-expanding aneurysm cover as defined in Claim 19, wherein said
5 proximal legs are biased outwardly from the longitudinal axis of said tubular member.

21. A self-expanding aneurysm cover as defined in Claim 18, wherein said aneurysm cover is constructed from a nickel-titanium alloy.

10 22. A self-expanding aneurysm cover as defined in Claim 19, wherein said proximal legs include a radiopaque marker.

23. A self-expanding aneurysm cover device as defined in Claim 17, wherein
said tubular member includes at least one distal leg; said distal leg extends generally
15 parallel to the longitudinal axis of said tubular member and is attached to the distal end of said tubular member.

24. A self-expanding aneurysm cover device as defined in Claim 23, wherein said distal leg includes a radiopaque marker.